

REMARKS

Reconsideration and allowance of this application are respectfully requested.

I. Summary of the Non-final Office Action

Claims 1-13 are pending in the application.

The Abstract is objected to under MPEP § 608.01(b).

The specification is objected to as the Examiner states that corrections to the terms used therein are required.

Claims 3 and 7-9 are objected to as the Examiner states that corrections to the terms used therein are required.

Claims 1-3 and 12-13 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by *Alexander et al.* (US 6,233,077; “*Alexander*”).

Claim 4 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Alexander* in view of *Carriere* (US 5,504,778).

Claims 5-7 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Alexander* in view of *Roberts* (US 6,067,180).

Claims 8 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Alexander* in view of *Roberts* and further in view of *Townsend et al.* (US 5,323,423; “*Townsend*”).

Claim 9 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Alexander* in view of *Feustel et al* (US 5,552,962; “*Feustel*”).

Claim 10 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Alexander* in view of *Feustel* and further in view of *Boulais* et al. (US Pub. 2003/0002498; “*Boulais*”).

Claim 11 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Alexander* in view of *Feustel* and further in view of *Boulais*, *Zwan* et al. (US 5,991,270; “*Zwan*”) and *Yeates* (US 5,278,404; “*Yeates*”).

II. Summary of the Amendment

By this Amendment, Applicant amends the Abstract and the specification as indicated in the office action. Applicant respectfully requests entrance of the Abstract and the specification as amended.

Applicant also amends claims 1, 3, 6-9 and 11, and adds new claims 13-15. No new matter is added. Applicant respectfully submits all the pending claims are now in condition for allowance.

III. Analysis of Claim Rejection under 35 U.S.C. § 102(b)

[Claims 1 and 12-13]

In rejecting claim 1, the Examiner reads the claimed signal regenerator on the optical remodulator depicted in Fig. 2 and col. 5 lines 6-19 of *Alexander*. Specifically, the Examiner alleges each element of *Alexander*'s remodulator corresponds to each element of the claim as following:

- the (wave shaping) filter 33 to the equalizer of the claim
- the clock data/recovery element (CDR) 43 to the data recovery circuit of the claim
- the switch 41 to the switch of the claim

Applicant, however, submits that *Alexander*'s remodulator should not be read on the claimed signal regenerator, since the filter 33 and the CDR 43 do not function as the equalizer and the data recovery circuit of the claim, thereby not being able to have the remodulator generate a corresponding result signal to that of the claimed signal regenerator.

The invention as claimed in these rejected claims is characterized in that, while a signal distortion that occurred in a coax cable or a backplane is compensated by an equalizer, an additional element of the (clock) data recovery circuit is provided to reprocess (or reshape) the output of the equalizer to reduce jitters if the output of the equalizer is a higher bitrate multiplex signal. In the claimed signal regenerator, therefore, an emphasis is on the output of the equalizer which is connected to the data recovery circuit if the output is a higher bitrate multiplex signal.

By contrast, however, assuming *arguendo* that the filter 33 corresponds to the equalizer of the claim, the CDR 43 does not reprocess the output of the filter 33 as opposed to the function

of the data recovery circuit. In other words, while a high bitrate signal input to the remodulator goes through only the CDR 43, the claimed signal regenerator processes a high bitrate input signal in at least two steps respectively at the equalizer and the data recovery circuit. Thus, in case of a high bitrate input signal, the output of the claimed signal regenerator will generate an output with a better frequency response compared to *Alexander's* remodulator. Therefore, the claimed signal regenerator is not anticipated by *Alexander's* remodulator.

For the same reasoning, claims 12 and 13 are not anticipated by *Alexander*, since the reference provides only one step signal processing for a high bitrate signal at either the filter 33 or the CDR 43, while the claimed method provides an at least two-step signal processing for a high bitrate signal.

Further, the switch of the claim is connected to the output of the equalizer and the data recovery circuit to be connected either with the equalizer or the data recovery circuit. However, the switch 41 of *Alexander* allegedly corresponding to the switch of the claim is disposed at the input end of the filter 33 and the CDR 43.

In addition, it should be noted that the equalizer is configured to process a multiplex signal while *Alexander's* remodulator in Fig. 2 representing each optical remodulator 30 of Fig. 1 is configured to process a single wavelength signal before multiplexing by the optical combiner 50 of Fig. 1. Thus, the filter 33 and the CDR 43 of the remodulator do not process a multiplex signal as in the claimed signal regenerator.

Therefore, Applicant respectfully submits that *Alexander's* remodulator fails to teach each and every element of claims 1 and 12, particularly, in a functional aspect as above.

[Claim 2]

In the claimed signal regenerator, detecting the bitrate of the input signal is performed by a detector constituting the data recovery circuit. In *Alexander*'s remodulator, by contrast, the switch 41 automatically selects between high and low bitrate signals. Thus, claim 2 is not anticipated by *Alexander*.

Claim 2 should be also allowable at least due to its dependency on claim 1.

[Claim 3]

The Examiner alleges that the decision circuit of the claim reads on the limiting amplifier 34 of *Alexander*.

Generally, a (limiting) amplifier is positioned at the end of an equalizer to amplify a frequency-response-improved or reshaped signal from the equalizer. The limiting amplifier 34 of *Alexander* is provided to perform this function in the remodulator. However, the decision circuit of the claim is not provided to perform a corresponding function; it decides upon logical signal value of between 0 and 1 (data value). The decision circuit is not provided as an amplifier for the equalizer output. Thus, claim 3 is not anticipated by *Alexander*.

Claim 3 should be also allowable at least due to its dependency on claim 1.

III. Analysis of Claim Rejection under 35 U.S.C. § 103(a)

[Claim 4]

In rejecting claim 4, the Examiner relies on *Carriere* (Fig. 2 and col. 11, lines 13-18 and lines 26-34) which provides a baseband modem. To test the modem, there appears to be provided a test loop; however, this alleged test loop is provided for testing a modem not for

testing a signal regenerator, including a data recovery circuit as well as an equalizer, which is configured to process a multiplex signal. Thus, claim 4 is not rendered obvious over *Alexander* in view of *Carriere*.

Claim 4 should be also allowable at least due to its dependency on claim 1.

[Claims 5 and 7-10]

These claims should be allowable at least due to its dependency on claim 1.

[Claim 6]

In rejecting claim 6, the Examiner appears to read the adder-subtractor of the claim on a plurality of adders as shown in Fig. 6 of *Roberts*. However, the adders of *Roberts* simply add variously weighted components of an input signal to form an output signal. The adders do not function to generate a signal which corresponds to a difference between outputs of the first and second taps. Thus, claim 6 should not be rendered obvious *Alexander* in view of *Roberts*.

Claim 6 should be also allowable at least due to its dependency on claim 1.

[Claim 11]

In rejecting claim 11, the Examiner alleges that using an unused output port of the switching module in the claim reads on *Zwan* (col. 12 line 46 to col. 13 line 34). However, the test device introduced in *Zwan* does not provide that a test signal is output from each unused port of the switching modules which constitute a switching matrix. Thus, claim 11 should not be rendered obvious *Alexander* in view of *Feustel* and further in view of *Boulais*, *Zwan* and *Yeates*

Claim 11 should be also allowable at least due to its dependency on claim 1.

IV. New Claims

New claims 13 and 14 are added based on the disclosure in the last paragraph of page 5 of the present application. New claim 15 is added based on the disclosure in the last paragraph of page 3 of the present application.

Applicant respectfully requests entrance and allowance of the new claims.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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CUSTOMER NUMBER

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/Kelly G. Hyndman 39,234/
Kelly G. Hyndman
Reg. No. 39,234